Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Establishing the Digital Opportunity Data Collection	)	WC Docket No. 19-195
	)	
Modernizing the FCC Form 477 Data Program	)	WC Docket No. 11-10

COMMENTS OF NCTA – THE INTERNET & TELEVISION ASSOCIATION

Steven F. Morris
Jennifer K. McKee
NCTA – The Internet & Television Association
25 Massachusetts Avenue, N.W. – Suite 100
Washington, D.C. 20001-1431

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NCTA – The Internet & Television Association (NCTA) strongly supports the Commission's efforts in the *Data Collection Order and FNPRM* to improve the quality of its broadband maps for the purpose of better targeting high-cost universal service support.[1] As explained in these comments, the Commission should move ahead with the implementation of its new polygon shapefile reporting regime and corresponding crowdsourcing initiative. The Commission's separate proposal to create a broadband serviceable location tool may have some merit for unserved areas, but at this stage there are far too many unanswered questions about how this tool will be created and how it would work in the real world for the Commission to commit to funding it.

INTRODUCTION AND SUMMARY

In the *Data Collection Order and FNPRM*, the Commission adopted a new requirement that broadband providers report polygon shapefiles representing their service areas.[2] As compared to the census block reporting approach required in the Form 477 context, polygon shapefiles should provide a much more granular and more accurate assessment of where

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1 *Establishing the Digital Opportunity Data Collection*, WC Docket No. 19-195, Report and Order and Second Further Notice of Proposed Rulemaking, FCC 19-79 (rel. Aug. 6, 2019) (*Data Collection Order and FNPRM*).

2 *Id*. ¶ 12.

broadband is available and where it is not. The Commission also adopted a crowdsourcing process by which the public can submit feedback on the maps the Commission produces based on provider-reported data and it solicited comment on a variety of additional proposals to improve the data collection regime, including the possible creation of a broadband serviceable location tool.[3]

The *Data Collection Order and FNPRM* represents the continuation of a consistent trend in which the Commission has worked with broadband providers to improve the Commission's collection of deployment data in a manner that balances the benefits of collecting more and better data with the costs of generating, submitting, analyzing, and publishing that data.[4] The Commission should continue with the same balanced approach as it considers additional steps in this proceeding. Merely increasing the *quantity* of data reported to the Commission is not the appropriate objective; it is critical that the Commission focus on the *quality* of data, its *relevance* to the goal of assessing and expanding broadband deployment, and the *ease* with which it can be incorporated into the Commission's decision-making process. The goal should be quickly implementing the new reporting obligations that were adopted in the *Data Collection Order and FNPRM* so that better data is available for use in distributing the Rural Digital Opportunity Fund,[5] rather than creating a whole new set of burdensome requirements that would delay the distribution of new funding for unserved areas.

The *Data Collection Order and FNPRM* seeks comment on three sets of issues that are of particular concern to NCTA. First, the Commission should provide guidance necessary to ensure the success of polygon shapefile reporting, but it should do so in a manner that preserves

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3 *Id*. ¶¶ 18, 77-111.

4 *Modernizing the Form 477 Data Collection*, WC Docket No. 11-10, Report and Order, 28 FCC Rcd 9887 (2013).

5 *Rural Digital Opportunity Fund*, WC Docket No. 19-126, Notice of Proposed Rulemaking, FCC 19-77 (rel. Aug. 2, 2019) (*Rural Digital Opportunity Fund NPRM*).

flexibility for the providers that must submit the data. As we explain below, as long as the Commission takes steps to ensure that all fixed broadband providers are using compatible GIS technology, the Commission should not specify or mandate any particular approach to creating the polygon shapefiles required under the new rules. Rather, the burden is on providers to submit data that accurately represents where they provide service. In addition, there will be processes in place to identify errors.

Second, the Commission should establish a crowdsourcing process that produces reliable and accurate data that can be used to supplement the data submitted by providers. In particular, it should develop a two-tier procedural approach that includes both an informal mechanism for data gathering and a more formal evidence-based challenge process. Such an approach would give all parties the opportunity to submit data regarding broadband coverage, but would enable providers and the Commission to focus on the input that is most likely to produce meaningful data for purposes of improving the Commission's broadband deployment maps, while placing less emphasis on data that does not have value in the specific context of assessing the state of broadband deployment.[6]

Finally, the Commission should identify the specific location information it needs to improve its support programs in unserved areas and the most efficient way to collect that data. When combined with polygon shapefile reporting, existing mapping tools already can provide the Commission and potential auction participants with significant information on the location of homes and businesses in unserved areas. The broadband location tool proposed in the *Data Collection Order and FNPRM* offers a path that could generate even more precise information. Until there is more visibility into how it will be created and updated, however, we do not think

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[6] *See, e.g.*, Letter from S. Derek Turner, Free Press, to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket No. 11-10 (July 11, 2019) (Free Press Letter) at 5 ("Unfortunately, much of the current discussion conflates and confuses the results from performance data measurements (e.g., Microsoft's and Penn State's broadband studies) with the FCC's broadband deployment data.").

the Commission can find that the benefits of such a tool, relative to the tools that already exist, are so great that they exceed the significant costs that have been projected. Far more information is needed before the Commission and USAC should move forward with the selection of a contractor to create such a tool. In addition, if the location tool is created, it should be limited to rural areas because there is no need for its creation and use in non-rural areas where high-cost support is unnecessary and existing mapping capability is sufficient to identify the location of homes and businesses.

I. THE COMMISSION SHOULD FOCUS ON IMPLEMENTATION OF POLYGON SHAPEFILE REPORTING

A. The Commission Should Ensure That Polygon Shapefiles Are Compatible with the Commission's Reporting System, But Otherwise Should Not Mandate How Shapefiles Are Created

In the *Data Collection Order and FNPRM*, the Commission seeks comment on a variety of questions regarding the implementation of the requirement that broadband providers submit polygon shapefiles representing the areas where they make broadband service available.[7] As we explain below, the Commission's focus should be on technological compatibility of the data that is submitted, not the specific details of how companies create that data.

As a threshold matter, the Commission should focus on maximizing the benefits of polygon shapefile reporting while recognizing that perfection is not achievable. Under the current census block reporting requirement, providers in many cases are able to comply with their reporting obligation without making a definitive determination as to whether every location in a census block can be served. For example, if some locations are served, the block can be reported as served without making a determination whether other locations in the block can be served. Polygon shapefile reporting can meaningfully improve the quality of data available to

[7] *Data Collection Order and FNPRM*, ¶¶ 78-87.

the Commission and the public in part because providers will have to make more granular determinations regarding the contours of their service areas.

The increased granularity that will be required to comply with the new rules will require a major change in how providers gather and report data. Given that the largest providers operate networks that pass tens of millions of homes and businesses, it would be wholly unrealistic to expect that every single location will be reported accurately. Particularly in the beginning, the Commission should recognize that even the most diligent providers will not be able to report at this level of granularity with 100 percent accuracy. When errors are identified, the Commission should focus on correcting data so that its future maps are as accurate as possible, not punishing providers for good-faith mistakes.

In implementing this new reporting requirement, it would be counterproductive for the Commission to micromanage the creation of polygon shapefiles. Under the Commission's rules, the burden is on providers to submit data that meets the reporting standard set in the order. Providers must be able to show that the polygon shapefiles they submit accurately represent the areas where they make service available without additional delays or charges attributable to extension of the network.[8] Beyond making clear what software it is using so filers can use tools that generate compatible data,[9] the Commission does not need to define how providers create their shapefiles.

For example, the Commission should not mandate the type of source data to be used by providers in creating shapefiles. While we expect that most cable operators will use network deployment data or node boundary data as the basis for their polygon shapefile submissions, some may find it easier or more efficient to use other sources of data, such as a database of

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8 *Id.* ¶ 13.

9 As NCTA has explained previously, other state and federal agencies already have done this successfully. *See* Letter from Steven F. Morris, NCTA, to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket No. 11-10 (May 3, 2019) at 4 (NCTA May 3 Letter).

homes passed.[10] And different service technologies may create shapefiles in different ways than cable operators do. There is no single method that will work for all providers and therefore mandating that all providers follow a single approach may create substantial burdens on some providers, without necessarily improving the quality of the deployment data they submit.

Similarly, the Commission should not establish a standard buffer distance for providers that base their polygon shapefiles on the footprint of their networks.[11] Establishing a uniform buffer that is smaller than a company actually uses in deciding where it deploys service may lead to underreporting of coverage and invite unnecessary compliance disputes. Conversely, establishing a single buffer distance that is too large may invite overreporting of coverage, which would undermine one of the main objectives of the new reporting regime. The best approach is to let providers choose a buffer distance or other reporting standard that accurately reflects their business practice.

While there is no need to mandate the specific details of how providers create their polygon shapefiles, the Commission should make clear that it retains the authority to require a provider to explain how its shapefiles were created upon a request for validation by Commission or USAC staff or in a more formal enforcement context. The obligation of providers to submit data that accurately reflects the contours of their service areas necessarily includes the obligation to explain to the Commission how that submission meets the applicable standard.

B. The Commission Should Not Require Providers to Report Latency

The *Data Collection Order and FNPRM* seeks comment on adding a latency component to the reporting obligation.[12] From NCTA's perspective, there is no need for providers to report

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[10] *See* Letter from Steven F. Morris, NCTA, to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket No. 11-10 (Apr. 10, 2019) at 3-4 (NCTA April 10 Letter).

[11] *Data Collection Order and FNPRM*, ¶ 79.

[12] *Id.* ¶ 81.

latency in connection with this new reporting obligation. The new reporting system already represents a significant change from the current Form 477 reporting process and the Commission should be reluctant to add new reporting metrics that will increase complexity and delay. In the past, the Commission has recognized that it is reasonable to presume that a provider that is meeting the applicable speed threshold is also meeting any applicable latency standards.[13] Such a presumption is fully supported by the latency data the Commission already collects from the largest providers through the Measuring Broadband America (MBA) program.[14] With respect to cable operators, the MBA data clearly demonstrates that there is no issue with latency for broadband services provided with standard cable technology and therefore no need to establish a burdensome new reporting obligation.[15]

C. The Commission Should Consider Additional Steps to Improve Its Broadband Data Regime

Beyond implementing the polygon shapefile reporting obligation, there are a variety of additional steps the Commission should take to improve the reporting regime. In particular, the Commission should harmonize the timing of the polygon shapefile reporting requirement with the filing of Form 477.[16] One of the benefits of the Form 477 process for providers, and presumably for the Commission, is the predictability of the filing schedule. The reporting schedule established in the *Data Collection Order and FNPRM* unfortunately will cause these

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[13] *Connect America Fund*, WC Docket No. 10-90, Report and Order, 28 FCC Rcd 7211, 7213-14, ¶ 7 (WCB 2013) ("There is ample evidence in the record, however, that providers that meet the speed requirement generally meet our other performance criteria.").

[14] Eighth Measuring Broadband America Fixed Broadband Report (OET 2018) (8th MBA Report) https://www.fcc.gov/reports-research/reports/measuring-broadband-america/measuring-fixed-broadband-eighth-report, at 16-17.

[15] *Id.* at 17, Chart 7 ("The differences in median latencies among terrestrial-based broadband services are relatively small and are unlikely to affect the perceived quality of highly interactive applications.").

[16] As explained in Section IV below, the Commission should sunset the reporting of census block deployment data on the Form 477.

two filing schedules to be out of sync, thereby increasing the potential for mistakes and confusion, without any discernible benefits.

Contrary to the Commission's suggestion in the *Data Collection Order and FNPRM*, the new reporting obligation is not structured in a way that permits providers to sync the two filings if they choose to "batch their changes together in six-month increments."[17] Unless a provider is able to update its shapefile data in real time, the requirement to report new or upgraded service every six months will require reporting on a more frequent basis than the Form 477 because most providers will need some period of time in which to compile the data to be reported. For example, providers must submit Form 477 data for the period from July 1 – December 31, 2019 on March 1, 2020. But if a provider submitted its shapefile data for that period on the same date, any deployment that occurred in July or August of 2019 would not be timely filed. The only way to report the shapefile data for that six-month period in compliance with the rules is to file it on January 1, 2020, one day after the six-month deployment period ends, which provides no time for compiling the data. It would be far better for all stakeholders if the Commission were to put the two filings on the same schedule.

The Commission also should commit to combining on a single map the deployment data identifying areas that received broadband funding grants through the Connect America Fund, the ReConnect program administered by the Rural Utilities Service, or from state-run broadband funding programs. Combining this data on a single map is essential to accurately identify the areas that are both unserved and unfunded. Unless there is a single resource that combines this data, there is a risk that the Commission or other agencies that distribute support for broadband deployment will provide funding that will enable other providers to overbuild existing broadband networks or broadband projects that already have received funding commitments. As the

[17] *Data Collection Order and FNPRM*, ¶ 17 n.32.

Commission previously has found, such a result would be an inefficient and unwarranted use of limited government resources.[18]

II. THE COMMISSION SHOULD USE RELIABLE CROWDSOURCED DATA TO SUPPLEMENT PROVIDER-REPORTED DATA

In the *Data Collection Order and FNPRM*, the Commission directed USAC to begin collecting crowdsourced data from the public regarding the accuracy of the deployment data submitted by broadband providers and published by the Commission. It also sought comment on "steps the Commission and USAC can take to make the best use of such data to improve the quality of the service-availability dataset going forward."[19] NCTA supports this effort to introduce crowdsourced data into the data collection regime and below we address some of the key questions raised by the Commission.

A. Crowdsourcing Can Be a Useful Tool, But Not All Crowdsourced Data Is Reliable or Relevant

NCTA appreciates the Commission's acknowledgement that the quality of the crowdsourced data and its relevance to the availability of broadband service are critical. There is a wide variety of data that could theoretically be used to supplement provider-reported deployment data, but not all of it is reliable or relevant. The focus should be on obtaining accurate data regarding availability of broadband, i.e., whether service at the relevant speed threshold is available for purchase in a particular area. As the Commission recognized in adopting its new reporting obligations, broadband providers represent the best source of this

[18] *Rural Digital Opportunity Fund NPRM*, ¶ 12 ("[B]y awarding support through a competitive bidding mechanism and targeting investment to areas where there is currently no private sector business case to deploy broadband without assistance, the Commission will ensure that its limited universal service support is awarded in an efficient and cost-effective manner, without overbuilding to areas that already have service.").

[19] *Data Collection Order and FNPRM*, ¶ 88.

data, but information from the public can be used to dispute a provider's assertion that it serves a particular area.[20]

In considering how best to handle claims that a provider has overstated its coverage area, the Commission should make clear that the best evidence for such claims is evidence that the provider has no facilities in the area or that a consumer has inquired about receiving service and the provider has stated that it cannot provide the requested service in a standard installation interval with no more than standard installation fees. Without evidence that an actual service inquiry was denied or that facilities do not exist to provide the reported service, a claim that service is unavailable in a particular area generally will be too speculative to be considered.

The Commission also should make clear that other types of data generally will be insufficient to prove that coverage has been overstated. Subscription data, i.e., how many people purchase service at the relevant speed threshold in a particular area, and performance data, i.e., what speed is measured on services delivered to people that purchase service at the relevant speed threshold in a particular area, may have some evidentiary value in demonstrating that service is available, but without more information, they do not offer dispositive proof that service is not available. The fact that a customer subscribes to an advertised tier of service or has run a speed test measuring that the advertised speed is being delivered can be dispositive of the fact that service is available at a location, but the absence of subscribers for a given speed tier or the absence of successful speed tests at that speed cannot, without more evidence, prove that service is unavailable.

The Commission should be particularly cautious about the type of speed test results it considers in assessing the validity of a provider's coverage claims. Online speed tests that do not

[20] *Id*. ¶ 18. While most of the feedback received from the public is likely to challenge over-reporting of coverage by a provider, the Commission should also accept information demonstrating that the map is incorrect because a provider erroneously under-reported its coverage.

control for factors outside the control of the provider should not be used for the purpose of assessing the validity of a provider's reported deployment. The Commission itself has explained that it uses a hardware-based testing approach for the MBA program because, "[a]ll software solutions implemented on a consumer's computer, smart phone, or other device connected to the Internet suffer from the following disadvantages:

- The software and computing platform running the software may not be capable of reliably recording the higher service tiers currently available.
- The software typically cannot know if other devices on the home network are accessing the Internet when the measurements are being taken. The lack of awareness as to other, non-measurement related network activity can produce inconsistent and misleading measurement data.
- Software measurements may be affected by the performance, quality and configuration of the device.
- Potential bottlenecks, such as Wi-Fi networks and other in-home networks, are generally not accounted for and may result in unreliable data.
- If the device hosting the software uses in-home Wi-Fi access to fixed broadband service, differing locations in the home may impact measurements.
- The tests can only run when the computer is turned on, limiting the ability to provide a 24-hour profile.
- If software tests are performed manually, panelists might only run tests when they experience problems and thus bias the results."[21]

As noted by the Commission, speed tests conducted over Wi-Fi networks can be particularly misleading when tests are conducted from locations that are not immediately adjacent to the router or gateway. Given the widespread use of Wi-Fi within most American households, the majority of online speed tests are most likely not reflecting the total throughput that is being delivered to the customer's modem or gateway.

[21] 8th MBA Report, Technical Appendix at 16-17.

Accordingly, as we explain in more detail below, the Commission should specify that it will only consider speed test data that isolates the performance of the broadband provider, as the MBA testing does. In addition, even if the speed testing platform appropriately measures the performance of the broadband provider, the Commission also should make clear that such test results will be considered relevant only for the location at which the speed test was conducted and only if it can be demonstrated that the results are specific to the broadband provider and service tier being challenged. The Commission also should make clear that a statistically valid pattern of under-performance is necessary to rebut a claim of coverage, not just one or two random speed test results.

B. The Commission Should Create a Two-Tier Process for Collecting Crowdsourced Data

The *Data Collection Order and FNPRM* seeks comment on the standards and processes that should be used when stakeholders submit crowdsourced data questioning the accuracy of a provider's reported coverage area.[22] NCTA proposes that the Commission develop a two-tier framework for considering such data that includes both a formal evidence-based challenge process that would take place before awarding funding through a new support mechanism and an informal process for data gathering that would be available at any time.

1. The Commission should create an evidence-based challenge process

One tier of this framework should be an evidence-based challenge process that places substantive evidentiary requirements on the party submitting the challenge, requires a response from the provider, and leads to a decision by the Commission if there is no resolution between the parties. Under this process, a challenging party should be required to certify to the accuracy of the data they are submitting just as providers certify to the accuracy of the data they must report. Providers should be given a reasonable opportunity to respond to the challenge, also

[22] *Data Collection Order and FNPRM*, ¶¶ 88-98.

subject to a certification requirement. Both sides should be limited to a single filing opportunity and the Commission or USAC staff then would resolve the dispute based on the evidence presented. The Commission would conduct this challenge process in advance of any distribution of funding from a new support mechanism.

We expect that most cases brought under this process would be focused on claims that a provider does not offer service in the relevant area within a standard installation interval and without special construction charges. As noted above, the best evidence for such claims would be credible information that there are no facilities in the area capable of providing the service reported by the provider or that the provider has indicated that it would not be able to provide the service in a standard installation interval and without special construction charges. Challengers could submit other data as well, subject to the applicable certification requirement, but for the reasons explained above, online speed test data should not be considered sufficient evidence to sustain a challenge under this process. There is no scenario in which online speed test data from an individual customer, without more evidence, would be sufficient to demonstrate that a provider is not capable of providing the service it has reported to the Commission.

The *Data Collection Order and FNPRM* also solicits comment on the use of bulk submissions.[23] Provided the Commission takes steps to guard against frivolous filings,[24] bulk submissions should be permitted subject to the same evidentiary standards noted above. Bulk submissions potentially have value because aggregation of data may help to address at least some of the concerns noted above regarding individual speed tests. For example, if tests from an entire neighborhood show sub-par performance, it is less likely that the deficiency is attributable to the

[23] *Id.* ¶¶ 97-98.

[24] *Id*. ¶ 97.

equipment in the home and more likely to be caused by a problem between the home and the test server (although not necessarily the network of the broadband provider).

That said, we note that some high-profile bulk data collection efforts fall well short of the standards identified above. For example, Microsoft has compiled data that purports to demonstrate the experience of Microsoft users on a county-by-county basis and it has suggested that this dataset demonstrates that the Commission's broadband availability statistics are vastly overstated.[25] For a variety of reasons, the Microsoft dataset should not be admissible in the evidence-based challenge process. Specifically, Microsoft has provided no meaningful information on how it determines the speed of a connection and therefore there is no way to determine if it has taken steps to isolate the performance of the broadband provider, as the MBA testing does. Furthermore, data on the average speed experienced by consumers across a county is not meaningful evidence of whether the maximum speed reported by a particular provider in a particular portion of the county is in fact available to consumers that live in that area. To have any meaning in this context, a sample of properly measured speed test results should be compared against the level of service purchased by the customer to see if there is a pattern of underperformance attributable to the provider. The Microsoft data does not come close to enabling that sort of analysis.[26]

For similar reasons, a recent study addressing broadband availability in rural Pennsylvania also should be ineligible for consideration in this process.[27] The Pennsylvania

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[25] *See, e.g.*, Letter from Paula Boyd, Microsoft, to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket No. 11-10 (Mar. 29, 2019), Attachment at 4.

[26] Free Press Letter at 5 n.9 ("[T]hese studies measure certain dimensions of performance without regard to a variety of reasons unrelated to last-mile deployment that could impact the measured performance. It is invalid to compare performance data for all subscribers in an area and conclude from those measurements that the FCC's deployment data is overstating deployment.").

[27] *See* Sascha Meinrath, et al., BROADBAND AVAILABILITY IN RURAL PENNSYLVANIA, The Center for Rural Pennsylvania (June 2019), at https://www.rural.palegislature.us/broadband/Broadband_Availability_and_Access_in_Rural_Pennsylvania_2019_Report.pdf.

study relies heavily on the Network Diagnostic Test (NDT), an online speed test that is incapable of accurately measuring broadband speeds. As documented in a recent technical paper, NDT results are strongly influenced by activity and equipment in the home that are beyond the control of the broadband provider.[28] The NDT test also uses a single Transmission Control Protocol (TCP) connection, rather than multiple TCP connections, which means that the test cannot accurately measure the broadband speeds that providers are delivering.[29]

It is important for the Commission to provide guidance regarding the types of performance test data it will consider as part of the challenge process as quickly as it can. We note that other states are in the process of establishing programs to crowdsource speed test data[30] and it would be highly beneficial if they knew in advance what would be required for such test data to be considered meaningful for purposes of the Commission's data collection regime.

2. The Commission should create an informal feedback process

The other tier of NCTA's proposed framework would be an informal feedback process that would place no substantive requirements on the party challenging the reported coverage, but only would result in information being passed on to providers, with no requirement for a formal response from the provider or decision by the Commission. USAC would track the incoming feedback, however, and if USAC or the Commission saw an exceptional level of feedback in a particular area or for a particular provider, they could investigate to determine whether there is a reporting problem that the provider should correct. The informal feedback also could trigger a closer inspection of submitted data during the validation process the Commission or USAC will conduct. For these reasons, the informal process could help avoid some of the problems the

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[28] See Nick Feamster and Jason Livingood, INTERNET SPEED MEASUREMENT: CURRENT CHALLENGES AND FUTURE RECOMMENDATIONS, at 7, at https://arxiv.org/pdf/1905.02334.pdf.

[29] *Id*.

[30] *See, e.g., North Carolina looks to challenge FCC over broadband coverage*, Statescoop (Sept. 11, 2019) (describing proposal to use the same testing platform as the Pennsylvania study), at https://statescoop.com/north-carolina-fcc-challenge-broadband-maps/.

Commission has encountered with validation of Form 477 data[31] and provide strong incentives for providers to amend future submissions if problems are identified.

Online speed test data could be provided as part of this process, including most bulk speed test results from governmental or private entities. While most online speed test data does not provide sufficient evidence to demonstrate that a provider is not capable of delivering the service it has reported, as explained above, such data can still provide insights that may be of value to a provider or to the Commission in identifying problem areas. For example, Microsoft's identification of counties with large gaps between the level of reported availability and the level of measured performance can be an indication that further investigation of the facts on the ground may be warranted. Accordingly, creating an informal mechanism for such data to be submitted to USAC by the public and forwarded to providers could be a worthwhile exercise.

3. Errors should be corrected in the next scheduled submission

The *Data Collection Order and FNPRM* seeks comment on what steps should be taken if errors by reporting providers are identified.[32] NCTA strongly encourages the Commission to find that any errors should be fixed by the provider in the next reporting cycle, rather than on a rolling basis. It is not practical or useful to have the deployment map in a constant state of flux or to impose a perpetual filing obligation on providers. The better approach is for an updated map to be published on a regular schedule (e.g., twice a year) based on the best data available at the time that providers submit their polygon shapefiles.[33]

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[31] *See, e.g., FCC 'looking into' reported error throwing broadband deployment numbers off by millions*, TechCrunch (Mar. 7, 2019), at https://techcrunch.com/2019/03/07/fcc-looking-into-reported-error-throwing-broadband-deployment-numbers-off-by-millions/.

[32] *Data Collection Order and FNPRM*, ¶ 93-94.

[33] As noted in Section I.C. above, we encourage the Commission to sync the schedule for filing the polygon shapefile data with the existing Form 477 schedule.

For similar reasons, the Commission should not require providers to refile old data if there are mistakes.[34] In any reporting regime with this level of data granularity, every version of the map and the underlying data will contain some mistakes, but there is no reason to think these mistakes will alter the general trends tracked by the Commission. Requiring retroactive corrections to the maps or the underlying data is unnecessary and will unduly burden providers and the Commission staff.

III. THE COMMISSION SHOULD FIND THE MOST EFFECTIVE AND EFFICIENT WAY TO IDENTIFY THE NUMBER AND LOCATION OF UNSERVED HOMES AND BUSINESSES

A. The Commission Does Not Need to Wait for the Creation of New Mapping Tools Before Distributing Additional Support to Promote Broadband Deployment in Unserved Areas

The Commission found in the *Data Collection Order and FNPRM* that polygon shapefile reporting will lead to a significant improvement in its ability to identify where providers offer broadband service and where service has yet to be deployed.[35] But for purposes of the Rural Digital Opportunity Fund or other support mechanisms, there may be value in additional data that focuses on identifying the number and location of unserved homes and businesses. The challenge for the Commission is to decide which data is necessary, the most efficient way to gather this data, whether responsibility for doing so should fall on the Commission or potential support recipients, and whether these efforts have any effect on the potential timing of new support mechanisms.

The starting point for this analysis should be a survey of the existing mapping tools that already can be used by providers and the Commission to assess the characteristics of unserved areas. As NCTA noted previously, the "GIS tools that exist today are powering a wide variety of

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[34] *Data Collection Order and FNPRM*, ¶ 94.

[35] *Id.* ¶ 21.

services, like Airbnb and Zillow, that may not be 100% accurate but nevertheless deliver substantial value to society."[36] At the most basic level, placing polygon shapefiles on a standard version of Google Maps would enable a provider to do some analysis of where, and how many, unserved locations are in a given area. Satellite imagery provides even greater detail to help determine which structures might need broadband service and which would not.[37] Other tools exist as well. Microsoft makes available a tool that shows the location of most buildings in the United States.[38] Pitney Bowes sells an "Address Fabric Data" product which provides a comprehensive list of geocoded address information and can be opened using software that shows the geocoded addresses on a map.[39] The Commission has also recognized that the U.S. Census Bureau publishes block-level data, and the National Address Database and Open Address Database each provide a list of addresses and point locations.[40]

We recognize that these products may not necessarily provide companies with absolute precision regarding the number of unserved locations and their latitude and longitude, but these tools all have the advantage of being available right now. In conjunction with on-the-ground analysis, these tools can provide a strong sense of the characteristics of most unserved areas. This should be especially true for the most likely auction participants – companies that already offer other services in the general area, such as electric cooperatives, cable operators, and – in

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36 NCTA May 3 Letter at 2.

37 Indeed, this type of manual review of satellite imagery seems to be the foundation on which the purported accuracy of the broadband serviceable location tool proposed by the Broadband Mapping Consortium is based. *See Broadband Mapping Initiative: Proof of Concept*, Presentation of CostQuest Associates (BMC Pilot Presentation), at 47, attached to Letter from Jonathan Spalter, USTelecom, et al., to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket No. 19-195 (Aug. 20, 2019) (BMC Pilot Letter). Based on the pilot results, millions of records would require visual verification if the Commission created a similar location tool on a nationwide basis.

38 *See Microsoft Releases 125 Million Building Footprints in the US as Open Data*, Bing Blogs, at https://blogs.bing.com/maps/2018-06/microsoft-releases-125-million-building-footprints-in-the-us-as-open-data.

39 *See* Pitney Bowes, Address Fabric Data – Geocoded Data, at https://www.pitneybowes.com/us/data/addressing-data/geocoded-data.html.

40 *Data Collection Order and FNPRM*, ¶ 105.

particular – telephone companies that were carriers of last resort for voice service and that already have received billions of dollars in subsidies to extend broadband service to these areas.[41]

Because such tools are already available, many existing support programs place the burden of identifying unserved locations on potential recipients when they seek support. In the CAF Phase II auction, for example, the Commission explicitly required bidders to certify that they bore "sole responsibility for investigating and evaluating all technical, marketplace, and regulatory factors that may have a bearing on the level of Connect America Fund Phase II support it submits as a bid," which presumably includes responsibility for properly identifying the location of supported homes.[42] The Commission has proposed a similar requirement for the Rural Digital Opportunity Fund.[43] Similarly, in the ReConnect program administered by RUS, the burden is on parties that are seeking funding to identify the number of unserved locations they plan to serve.[44] In short, sufficient tools are available today that the Commission does not need to wait for the development of any new tools before distributing additional support to promote deployment in unserved areas.

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41 Indeed, the suggestion by some of these telephone companies that they will have no idea where homes are located or how to bid in a future auction unless the Commission creates an expensive new location tool is hard to fathom.

42 *Connect America Fund Phase II Auction Scheduled for July 24, 2018 Notice and Filing Requirements and Other Procedures for Auction 903*, WC Docket No. 10-90, Public Notice, 33 FCC Rcd 1428, 1472, ¶ 119 (2018). In particular, the Commission explicitly found that bidders assume the risk for any inaccuracy or incompleteness of the Commission's own databases. *Id.* ¶ 118.

43 *Rural Digital Opportunity Fund NPRM*, ¶ 78.

44 *See, e.g., Rural E-Connectivity Program Application Guide for Fiscal Year 2019*, Rural Utilities Service (Apr. 23, 2019) at 86 (requiring detailed description of proposed project, including "overall subscriber count, and a narrative of the proposed coverage locations.").

B. There Are Significant Questions Regarding the Proposed Broadband Location Tool That Must Be Answered Before the Commission Decides Whether to Move Forward

The *Data Collection Order and FNPRM* proposes to create a broadband serviceable location tool that would function as a database of every home and business in America that needs broadband service.[45] Based on the version of this tool that has been proposed by the Broadband Mapping Consortium (BMC),[46] far more information is needed before the Commission should consider adopting this proposal.

1. More information is needed on how the broadband serviceable location tool will be created and updated

As an initial matter, the Commission and the public are entitled to much greater transparency and visibility into the development of the broadband serviceable location tool. According to CostQuest, the consultant hired by the BMC to create the location tool and run their proof-of-concept pilot in Virginia and Missouri, the location tool aggregates millions of data points from a variety of sources, including land use records, parcel data, building footprint data, and road data.[47] CostQuest acknowledges that there are flaws in each of the data sources it relies on, but it argues that the "fabric" produced from combining all of this information is stronger than any of the individual data threads.[48] CostQuest then assigns geocodes for the precise location where broadband service is needed for every home and business, with a manual visual verification process used where there is uncertainty about the underlying data.[49] The

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45 *Data Collection Order and FNPRM*, ¶¶ 100-101.

46 BMC Pilot Letter at 1-2.

47 Testimony of James W. Stegeman, President of CostQuest Associates, Before the House Subcommittee on Telecommunications and Technology (Sept. 11, 2019) (Stegeman Testimony), at 7-8.

48 Stegeman Testimony at 8, 14-15.

49 BMC Pilot Presentation at 24; Stegeman Testimony at 8, 15.

visual review process seems to be essential to the purported reliability of the overall dataset given that it was applied to more than 100,000 records in the two pilot states.[50]

While the BMC and CostQuest have declared that the pilot project was a great success and that it demonstrates that a nationwide broadband serviceable location tool should be created, we think those conclusions are premature. At this point, no party, including the Commission, has been granted access to the location tool created for the pilot or any of the underlying data on which it is based. Accordingly, there is no way to verify the accuracy of any claims the BMC has made about their success in identifying the location of homes and businesses, the flaws in the location counts used by the Commission, or any of their other claims. Nor is there any way to test the suitability of the tool for use in the Commission's new polygon shapefile reporting regime or its value to prospective participants in the Rural Digital Opportunity Fund process because the BMC has only submitted a limited set of outputs from the tool, not the tool itself. And in a troubling sign, even the publicly submitted documentation – all 80 pages of the report on the pilot – bears the following notation: "Property of CostQuest Associates. Any use without permission is prohibited."[51]

Furthermore, before the Commission can conclude the pilot project was a success, more detail is needed on the mechanics of how CostQuest created the location tool. Given the flaws that have been identified in the underlying source data, there needs to be a fuller explanation of how decisions were made about what structures to count and how the geocoordinates were determined – How were parcel boundaries created if they were not available from the local government? How were addresses or other identifiers assigned to locations without formal street addresses? Were there any unique issues associated with tribal areas and, if so, how were they

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[50] Stegeman Testimony at 15; BMC Pilot Presentation at 47 (140,000 pilot records were subject to visual verification process).

[51] BMC Pilot Presentation at 1-80.

addressed? Will the outputs of the location tool be compatible with the information possessed by providers? These and many other questions need to be answered before a complete analysis of the proposal can be performed.

Similarly, far more detail is needed on how the location tool will be updated. Every year, thousands of new homes are built, while thousands of existing homes are lost to natural disasters or to programs in many cities that demolish vacant structures. In this fluid environment, regular updates to the location tool obviously are essential to ensuring the accuracy of any reporting that relies on that tool. CostQuest acknowledges the importance of performing these updates,[52] but there is no discussion in the record as to how a contractor would keep up with these developments in a timely manner.

Finally, additional detail is also needed about the cost of creating the broadband serviceable location tool. CostQuest has estimated that location tool will cost between $22 million and $24.5 million, with annual updates of $7 million to $8 million, if it is created using publicly available data, and that it will cost between $8.5 million and $11 million, with annual updates of $3 million to $4 million, if it is created using third party data. It is unclear where these cost estimates come from, and BMC has not shared the methodology or inputs it used to arrive at these numbers. The BMC also has not addressed whether it is possible to utilize existing mapping tools, like the ones mentioned above, as an input or substitute for the location tool so that the Commission does not have to incur the significant costs associated with creating a location tool from scratch.

2. Any broadband serviceable location tool should be limited to rural areas

If the Commission moves forward with the proposal to create a broadband serviceable location tool, the locations in the database should be limited to rural areas. If the primary value

[52] Stegeman Testimony at 5.

of the proposed tool is to generate more precise data on the location of homes and businesses where broadband is not available, the focus clearly should be targeted on rural areas, particularly those rural areas that are identified as unserved. As stated by Free Press, "the reality is that in basically every location where there is a cable company (which covers about 90 percent of the U.S.'s households) there is broadband service available that meets the Commission's 25/3 Mbps capability threshold."[53]

Moreover, there is insufficient evidence to conclude that such a tool can effectively compile and display data at all, much less in densely populated urban areas. For example, we have significant concerns regarding the treatment and display of data for multi-tenant environments (MTEs).[54] None of the examples provided by the BMC explain how a contractor would gather data on MTEs, determine how many serviceable locations are associated with an MTE, or display a map showing all the locations in an MTE in a densely populated area.

Limiting the broadband serviceable location tool to rural areas is especially important if the location tool is funded by USAC pursuant to its responsibility for administering the Universal Service Fund (USF) program. There is no reason to think that the precise location data that a location tool will generate is necessary to accomplish any USF-related purpose in urban or suburban areas and therefore no basis for recovering such costs through the USF contributions assessed on American consumers.

3. The Commission should not delay the new polygon shapefile reporting regime while it considers whether to develop a broadband serviceable location tool

The *Data Collection Order and FNPRM* correctly found that adding a new polygon shapefile reporting obligation will significantly improve the Commission's ability to identify

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53 Free Press Letter at 5 n.9.

54 *Data Collection Order and FNPRM*, ¶ 102.

areas where broadband is still not available, but asks whether the timing should be coordinated with the creation of a broadband serviceable location tool.[55] Because of the tremendous value that the implementation of shapefile reporting can bring to the process of identifying unserved areas, there is no reason to delay its implementation or otherwise take steps to put the reporting requirements on the same schedule as the broadband serviceable location tool. As noted above, there are still far too many uncertainties about the location tool for the Commission to commit to moving forward with it. And even if the Commission ultimately answers these outstanding questions and does move forward with it, the process for creating it will take at least a year from the time a contract is awarded, and likely much longer.[56]

In addition, because the location tool is not an essential prerequisite to distributing funding, there is no need for the Commission to rush to create such a tool. Specifically, the contract for creation of any location tool should be put out for competitive bidding like any other multi-million dollar contract awarded by the Commission or USAC.[57] While the BMC has done a limited pilot project with CostQuest, the Commission or USAC must put the project out for competitive bid because there may be other entities that are able to perform the work in a more transparent and/or less expensive manner than CostQuest.

4. The Commission should not require address or location-based reporting by providers

The *Data Collection Order and FNPRM* seeks comment on whether, if the Commission goes forward with creating a broadband serviceable location tool, it also should create a

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55 *Id.* ¶ 110.

56 Stegeman Testimony at 16. Given that the Commission has not yet decided to create a broadband serviceable location tool, has not issued a Request for Proposals of any kind, and does not appear to have $10 million in its 2020 budget for the creation of such a tool, it will be far longer than the 12-15 months projected by CostQuest before such a tool could be completed.

57 *Data Collection Order and FNPRM*, ¶ 29 n.69.

"lookup" tool for "integrating provider address data into the locations database."[58] As suggested by the Commission,[59] the adoption of the polygon shapefile reporting obligation eliminates any need for providers to submit address data. Once it collects polygon shapefiles from all providers, the Commission should be able to display a map that shows which areas are served and which ones are not. Existing mapping tools should make it possible for the public to pinpoint an address or location either by entering it into a search box or zooming in to the area they are interested in. No additional data from providers should be needed.

The Commission also should make clear that providers are not required or expected to submit address or location-level information to USAC or a contractor to enable the development of the broadband serviceable location tool. While CostQuest collected address data from some BMC participants for its pilot project in Virginia and Missouri, that address data was used to generate estimates regarding the extent of broadband coverage in those states, not for the creation of the location tool itself.[60] If the Commission creates such a tool, that should be a distinct exercise from the reporting of broadband coverage by providers and should not in any way depend on the submission of additional information from providers.

IV. THE COMMISSION SHOULD SUNSET THE COLLECTION OF DEPLOYMENT DATA VIA THE FORM 477

The *Data Collection Order and FNPRM* seeks comment on whether the Commission should phase out the reporting of deployment data on the Form 477.[61] NCTA proposes that the Commission should eliminate such reporting after the first full year of the new data collection (i.e., two reporting cycles if the Commission adopts NCTA's proposal to sync the polygon shapefile reporting with the Form 477 reporting). We believe this proposal balances the

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58 *Id.* ¶ 108.

59 *Id*.

60 BMC Pilot Presentation at 36.

61 *Data Collection Order and FNPRM*, ¶ 135.

Commission's interest in continuing to collect Form 477 deployment data as a baseline for comparisons to periods before the shapefile reporting requirement, with the burden on providers from requirements to file multiple reports covering the same type of data. After two successful cycles with the shapefile reporting requirement, the Commission will be able to do year-over-year comparisons of broadband availability and there should no longer be any need to track deployment through census block reporting.

CONCLUSION

The *Data Collection Order and FNPRM* made important strides in improving the Commission's broadband data collection regime. The Commission should build on that success by taking steps to implement the new polygon shapefile reporting requirement and the corresponding crowdsourcing initiative. In contrast, while the proposed broadband service location tool has potential value if it can accurately identify unserved locations in rural areas, at this point it would be premature to move forward with creating such a tool, particularly in urban and suburban areas.

Respectfully submitted,

Steven F. Morris
Jennifer K. McKee
NCTA – The Internet & Television Association
25 Massachusetts Avenue, N.W. – Suite 100
Washington, D.C. 20001-1431

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